

CLAIMS

1. A gearbox, comprising:
 - a sealed housing for receiving a lubricant;
 - a first rotational shaft provided in the housing;
 - a gear drive coupled to the rotational shaft to rotate the shaft;
 - 5 a first bearing journaling the first rotational shaft at a distance above the gear drive; and
 - at least one channel provided in the housing and extending to the bearing, a bottom of the channel being positioned above and adjacent the gear drive to receive lubricating fluid rotated by the gear drive;
- 10 wherein, as the gear rotates, rotating lubricants pass into the channel and are carried by momentum to the first bearing for lubrication.
2. The gearbox as defined in claim 1, further comprising a recess provided at the bottom end of the channel, the recess being enlarged relative to the channel to capture rotating fluids.
3. The gearbox as defined in claim 1, further comprising a shoulder extending radially inward toward the rotational shaft from a wall of the housing.

4. The gearbox as defined in claim 3, wherein the distance between the inner diameter of the shoulder and the outer diameter of the rotational shaft is selected to be sufficiently small that the viscosity of the lubricant restricts the opening between the inner diameter of the shoulder and the outer diameter of the rotational shaft to provide a
5 resistance to the flow of fluid.

5. The gearbox as defined in claim 1, further comprising a second bearing positioned on the first rotational shaft nearer the gear drive than the first bearing, the channel extending past the second bearing to the bearing.

6. The gearbox as defined in claim 1, further comprising a second rotational shaft provided in the housing, the second rotational shaft being positioned at an angle to the rotational shaft and coupled to the rotational shaft through the gear drive.

7. The gearbox as defined in claim 1, wherein the gearbox comprises a plurality of channels, each of the channels being spaced substantially equidistantly around a circumference of the housing surrounding the first rotational shaft.

8. The gearbox as defined in claim 6, wherein the housing comprises an upper section and a lower section, the upper section enclosing the first rotational shaft and the lower section enclosing the second rotational shaft.

9. The gearbox as defined in claim 8, wherein the upper section is a split case comprising a first and a second half.

10. A gearbox, comprising:

- a sealed housing;
- a substantially vertical shaft provided in the housing;
- an upper bearing and a lower bearing journaling the shaft;
- 5 a gear drive coupled to the shaft;
- a lubricant provided in the housing for lubricating the gear drive;
- a shoulder positioned between the upper and lower bearings and extending radially inward from an internal diameter of the housing toward the shaft, the internal diameter of the shoulder being selected such that the viscosity of the lubricant restricts an
- 10 opening between the shoulder and the input shaft; and
- a channel provided in the housing extending from the gear drive past the first bearing and the shoulder to the upper bearing;
- wherein as the gear drive rotates, the rotation causes the lubricant to be circulated through the channel to lubricate the upper bearing.

11. The gearbox as defined in claim 10, further comprising a second shaft provided in the housing, the second shaft being positioned at an angle of substantially ninety degrees to the substantially vertical shaft.

12. The gearbox as defined in claim 10, further comprising a plurality of channels.

13. The gearbox as defined in claim 10, wherein a recess having a diameter greater than a diameter of the channel is provided at an end of the at least one channel adjacent the gear train.

14. The gearbox as defined in claim 10, wherein the channel angles from a wide point adjacent the gear train to a narrow point adjacent the upper bearing.

15. The gearbox as defined in claim 10, wherein the housing comprises an upper portion and a lower portion.

16. The gearbox as defined in claim 15, wherein the channel is provided in the upper portion.

17. The gearbox as defined in claim 16, wherein the upper portion includes a first half and a second half, each of the first and second halves including a channel, a first half channel, and a second half channel.

18. A method for lubricating a bearing on a substantially vertical shaft in a vertically configured right angle gear box including a housing with a quill surrounding the substantially vertical shaft using a lubricant from the gear box, the method comprising:

- 5 providing a channel in the quill adjacent the vertical shaft
- minimizing a distance between the vertical shaft and the quill such that a viscosity of the lubricant restricts the flow of fluids between the vertical shaft and the housing and fluids are therefore directed through the channel;
- positioning an open bottom end of the channel adjacent a source of lubricating
- 10 fluid; and
- rotating the gears in the gearbox, causing the lubricating fluid to move into the channel to lubricate the bearing.

19. The method as defined in claim 18, further comprising providing an enlarged recess around the open bottom end, the enlarged recess capturing the rotating fluids.

20. The method as defined in claim 18, further providing the step of providing a plurality of channels spaced equidistantly around the quill.